

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A communication system which sets a periodic transmission timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a~~the~~ period and a quasi-data transmission time which is the time other than the data transmission time in the same period, ~~wherein in accordance with a network transmission path, characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data assigned to one period correspond to one or more symbols, the one or more bits in each of the symbols are transmitted on the network transmission path during the data transmission time of that the same period of the transmission timing, and the transmitted data are distributed uniformly over the data transmission time of the period.

2. (Currently Amended) A communication system which sets a periodic transmission timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a~~the~~ period and a quasi-data transmission time which is the time other than the data transmission time in the same period, ~~wherein in accordance with the network transmission path, characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such

a manner that all the data assigned to one period correspond to one or more symbols, the one or more bits in each of the symbols are transmitted on the network transmission path during the data transmission time and the quasi-data transmission time of that the same period of the transmission timing, and the transmitted data are distributed uniformly over each of the data transmission time and the quasi-data transmission time of the period.

3. (Currently Amended) A communication system which sets a periodic transmission timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time in the same period in accordance with a network transmission path and transmits a first and a second data by multiplexing, wherein characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing,

data bits of the first data assigned to one transmitted during a particular period correspond to a first set of the transmission timing are organized into one or more symbols, which are transmitted on the network transmission path during the data transmission time of that the particular period, the first data being distributed uniformly over the data transmission time of the period, and

data bits of the second data assigned to one transmitted during the particular period

~~correspond to a second set of~~ are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time of the ~~predetermined~~ particular period where the first data have not been assigned.

4. (Currently Amended) A communication system which sets a periodic transmission timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a ~~the~~ period and a quasi-data transmission time which is the time other than the data transmission time in the same period ~~in accordance with a network transmission path~~ and transmits a first and a second data by multiplexing, wherein ~~characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing,

data bits of the first data assigned to one transmitted during a particular period ~~correspond to a first set of~~ the transmission timing are organized into one or more symbols, which are transmitted on the network transmission path during the data transmission time and the quasi-data transmission time of ~~that the particular period and, the first data being~~ distributed uniformly over each of the data transmission time and the quasi-data transmission time of the particular period, and

data bits of the second data assigned to one transmitted during the particular period ~~correspond to a second set of~~ are organized into one or more symbols, which are transmitted on

the network transmission path in the portion of the data transmission time and the quasi-data transmission time of the ~~predetermined particular~~ period where the first data have not been assigned.

5. (Currently Amended) A communication system which sets a periodic transmission timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time in the same period, wherein ~~in accordance with a network transmission path, characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data assigned to one period correspond to one or more symbols, the one or more bits in each of the symbols are transmitted on the network transmission path during the data transmission time of that the same period of the transmission timing, and the transmitted data are distributed uniformly over the data transmission time of the period,

the transmitted data bits transmitted in this manner is ~~are~~ received, and all of the one or more symbols of the data assigned to that a particular period of the transmission timing are reproduced based on the ~~portion of the data bits received data assigned to as part of the data transmission time of the same particular period.~~

6. (Currently Amended) A communication system which sets a periodic transmission

timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the
period and a quasi-data transmission time which is the time other than the data transmission time
in the same period, wherein ~~in accordance with a network transmission path, characterized in~~
~~that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing
are organized into units of symbols and assigned to bit spaces allocated for transmission in such
a manner that all the data assigned to one period correspond to one or more symbols, the one or
~~more bits in each of the~~ symbols are transmitted on the network transmission path during the data
transmission time and the quasi-data transmission time of ~~that the same period of the~~
transmission timing, and the transmitted data are distributed uniformly over each of the data
~~transmission time and the quasi-data transmission time of the period,~~

the transmitted data bits transmitted in this manner is are received, and ~~all of the one or~~
~~more symbols of the data assigned to that a particular period of the transmission timing~~ are
reproduced based on the portion of the data bits received data assigned to the as part of the data
transmission time and the quasi-data transmission time of the ~~same particular~~ period.

7. (Currently Amended) A communication system which sets a periodic transmission
timing in accordance with a network transmission path, such that each period of the transmission
timing includes a data transmission time which is the time suitable for data transmission in a the
period and a quasi-data transmission time which is the time other than the data transmission time
in the same period ~~in accordance with a network transmission path~~ and transmits a first and a

second data by multiplexing, ~~wherein characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing
are organized into units of symbols and assigned to bit spaces allocated for transmission in such
a manner that all the data bits in each of the symbols are transmitted on the network transmission
path during the data transmission time of the same period of the transmission timing, so that

~~_____ data bits of the first data assigned to one transmitted during a particular period correspond~~
~~to a first set of the transmission timing are organized into one or more symbols, which are~~
transmitted on the network transmission path during the data transmission time of the particular
period, ~~and the first data being distributed uniformly over the data transmission time of the~~
~~period, so that~~

~~_____ data bits of the second data assigned to one transmitted during the particular period~~
~~correspond to a set of are organized into one or more symbols, which are transmitted on the~~
network transmission path in the portion of the data transmission time of the ~~predetermined~~
~~particular period where the first data have not been assigned, and so that~~

~~_____ the transmitted data bits so assigned and transmitted are received and all symbols of the~~
~~first data of one assigned to the particular period are reproduced based on the portion of the~~
~~received first data bits received as part of assigned to the data transmission time for the particular~~
period, and wherein ~~all symbols of the second data of a predetermined assigned to the particular~~
period are reproduced based on the data bits received second data assigned to as part of the data
transmission time of the ~~predetermined particular period.~~

8. (Currently Amended) A communication system which sets a periodic transmission

timing in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time in the same period in accordance with a network transmission path and transmits a first and a second data by multiplexing, wherein characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing,

data bits of the first data assigned to one transmitted during a particular period correspond to a first set of the transmission timing are organized into one or more symbols, which are transmitted on the network transmission path during the data transmission time and the quasi-transmission time of that the particular period, the first data being distributed uniformly over each of the data transmission time and the quasi-data transmission time of that period, and

data bits of the second data assigned to one transmitted during the particular period correspond to a second set of are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time and the quasi-data transmission time of the predetermined particular period where the first data have not been assigned, and wherein

the transmitted data bits so assigned and transmitted are received, and all symbols of the first data of one assigned to the particular period are reproduced based on the portion of the received first data bits received as part of assigned to the data transmission time and the quasi-

data transmission time of the particular period, while ~~all symbols of the second data of a~~
~~predetermined-assigned to the particular period~~ are reproduced based on the ~~portion of the~~
~~received second data~~ bits received as part of assigned to the data transmission time and the quasi-
data transmission time of the ~~predetermined-particular period~~.

9. (Currently Amended) A communication method in which a periodic transmission
timing is set in accordance with a network transmission path such that each period of the
transmission timing includes a data transmission time which is the time suitable for data
transmission in a the period and a quasi-data transmission time which is the time other than the
data transmission time is set in the same period, wherein in accordance with the transmission
path, characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing
are organized into units of symbols and assigned to bit spaces allocated for transmission in such
a manner that all the data assigned to one period correspond to one or more symbols, the one or
more bits in each of the symbols are transmitted on the network transmission path during the data
transmission time of that the same period of the transmission timing, and the data are distributed
uniformly over the data transmission time of the period.

10. (Currently Amended) A communication method in which a periodic transmission
timing is set in accordance with a network transmission path such that each period of the
transmission timing includes a data transmission time which is the time suitable for data
transmission in a the period and a quasi-data transmission time which is the time other than the

data transmission time is set in the same period, wherein ~~in accordance with the transmission path, characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing
are organized into units of symbols and assigned to bit spaces allocated for transmission in such
a manner that all the data assigned to one period correspond to one or more symbols, the one or
more bits in each of the symbols are transmitted on the network transmission path during the data
transmission time and the quasi-data transmission time of ~~that~~ the same period of the
transmission timing, and the data are distributed uniformly over each of the data transmission
time and the quasi data transmission time of the period.

11. (Currently Amended) A communication method in which a periodic transmission
timing is set in accordance with a network transmission path, such that each period of the
transmission timing includes a data transmission time which is the time suitable for data
transmission in ~~a~~ the period and a quasi-data transmission time which is the time other than the
data transmission time in the same period ~~is set in accordance with a network transmission path~~
and ~~transmits a first and a second data~~ are transmitted by multiplexing, wherein characterized in
that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing
are organized into units of symbols and assigned to bit spaces allocated for transmission in such
a manner that all the data bits in each of the symbols are transmitted on the network transmission
path during the data transmission time of the same period of the transmission timing,

data bits of the first data assigned to one transmitted during a particular period correspond

~~to a first set of~~ the transmission timing are organized into one or more symbols, which are transmitted on the network transmission path during the data transmission time of ~~that the~~ particular period, the first data being distributed uniformly over the data transmission time of the period, and

data bits of the second data assigned to one transmitted during the particular period ~~correspond to a second set of~~ are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time of the ~~predetermined~~ particular period where the first data have not been assigned.

12. (Currently Amended) A communication method in which a periodic transmission timing is set in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time in the same period is set in accordance with a network transmission path and transmits a first and a second data are transmitted by multiplexing, wherein characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing,

data bits of the first data assigned to one transmitted during a particular period correspond ~~to a first set of~~ the transmission timing are organized into one or more symbols, which are

transmitted on the network transmission path during the data transmission time and the quasi-data transmission time of ~~that the particular period, the first data being distributed uniformly over~~
~~each of the data transmission time and the quasi-data transmission time of the period, and~~
_____ data bits of the second data assigned to one transmitted during the particular period
~~correspond to a second set of~~ are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time and the quasi-data transmission time of the ~~predetermined particular period~~ where the first data have not been assigned.

13. (Currently Amended) A communication method in which a periodic transmission timing is set in accordance with a network transmission path such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time is set in the same period, wherein in accordance with the transmission path, characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data assigned to one period correspond to one or more symbols, the one or more bits in each of the symbols are transmitted during the data transmission time of that the same period, and the data are distributed uniformly over the data transmission time of the period,
_____ the transmitted data bits transmitted in this manner is are received, and all of the one or more symbols of the data assigned to that a particular period of the transmission timing are

reproduced based on the ~~portion of the data bits~~ received ~~data assigned to~~ as part of the data transmission time of the ~~same particular~~ period.

14. (Currently Amended) A communication method in which a periodic transmission timing is set in accordance with a network transmission path such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in ~~a the~~ period and a quasi-data transmission time which is the time other than the data transmission time is set in the same period, ~~wherein in accordance with the transmission path, characterized in that,~~

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data assigned to one period correspond to one or more symbols, the one or more bits in each of the symbols are transmitted on the network transmission path during the data transmission time and the quasi-data transmission time of that the same period of the transmission timing, and the data are distributed uniformly over each of the data transmission time and the quasi-data transmission time of the period,

the transmitted data bits transmitted in this manner is ~~are~~ received, and ~~all of the one or more symbols of the data assigned to that the particular period of the transmission timing~~ are reproduced based on the ~~portion of the received data bits assigned to~~ received as part of the data transmission time and the quasi-data transmission time of the ~~same particular~~ period.

15. (Currently Amended) A communication method in which a periodic transmission

timing is set in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a the period and a quasi-data transmission time which is the time other than the data transmission time in the same period is set in accordance with the transmission path and transmits a first and a second data are transmitted by multiplexing, wherein characterized in that,

a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing, so that

data bits of the first data for one transmitted during a particular period of the transmission timing are organized into one or more symbols, which can be are transmitted on the network transmission path during the data transmission time of the particular period, and the first data are distributed uniformly over the data transmission time of the period, so that

data bits of the second data of a predetermined transmitted during the particular period can be are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time of the predetermined period where the first data have not been assigned, and so that

the transmitted data bits so assigned and transmitted are received and all symbols of the first data of one assigned to the particular period are reproduced based on the portion of the received first data bits received as part of assigned to the data transmission time for the particular period, and wherein all symbols of the second data of a assigned to the predetermined period are reproduced based on the data bits received second data assigned to as part of the data

transmission time of the ~~predetermined~~ particular period.

16. (Currently Amended) A communication method in which a periodic transmission timing is set in accordance with a network transmission path, such that each period of the transmission timing includes a data transmission time which is the time suitable for data transmission in a ~~the~~ period and a quasi-data transmission time which is the time other than the data transmission time in the same period is set in accordance with the transmission path and transmits a first and a second data are transmitted by multiplexing, wherein characterized in that,
a set of data bits to be transmitted over a plurality of periods of the transmission timing are organized into units of symbols and assigned to bit spaces allocated for transmission in such a manner that all the data bits in each of the symbols are transmitted on the network transmission path during the data transmission time of the same period of the transmission timing,
data bits of the first data for one transmitted during a particular period can be of the transmission timing are organized into one or more symbols, which are transmitted on the network transmission path during the data transmission time and the quasi-transmission time of that the particular period, and the first data are distributed uniformly over each of the data transmission time and the quasi-data transmission time of that period, and
data bits of the second data of a predetermined the particular period can be are organized into one or more symbols, which are transmitted on the network transmission path in the portion of the data transmission time and the quasi-data transmission time of the predetermined period where the first data have not been assigned, and wherein

~~_____ the transmitted data bits so assigned and transmitted~~ are received, and ~~all symbols of the~~ first data ~~of one assigned to the particular period~~ are reproduced based on the ~~portion of the~~ received first data bits received as part of assigned to the data transmission time and the quasi-data transmission time, while ~~all symbols of the second data of a predetermined assigned to the particular period~~ are reproduced based on the ~~portion of the received second data bits received as part of assigned to the data transmission time and the quasi-data transmission time of the predetermined particular period.~~

17. (Currently Amended) A transmission device in a communication system, which ~~sets~~ transmits a set of data bits according to a periodic transmission timing, wherein each period of the transmission timing includes a first and second transmission time, for each period and the set of data bits are transmitted over a plurality of periods of the transmission timing, the device being configured to:

~~_____~~ organize the data bits into units of data symbols;

~~_____~~ allocate a constant number of data bit spaces for transmission during each period of the transmission timing, the data bits spaces being allocated to achieve a higher transmission rate during the first transmission time than the second transmission time; and

~~_____~~ assign one or more data symbols to a period;

~~_____~~ assign the data bits of the one or more in the data symbols for to the allocated data transmission bits spaces, such that all of the assigned data bits in each data symbol are transmitted from the transmission device during the same period of the transmission timing, and

~~the transmitted bits are uniformly assigned over at least one of the first and second transmission times.~~

18. (Currently Amended) The device according to claim 17, wherein the device is configured to:

assign the data bits ~~to the period~~, such that all of the data bits are transmitted during the first transmission time ~~of the period~~.

19. (Previously Presented) The device according to claim 18, wherein the first transmission time corresponds to far-end crosstalk time generated in a transmission data path.

20. (Currently Amended) The device according to claim 18, wherein
the one or more data symbols includes at least one symbol of a first data and at least one symbol of a second data, and

the device is configured to assign the data bits such that the at least one symbol of the first data is transmitted during the first transmission time, and the at least one symbol of the second data is transmitted during a portion of the first transmission time not assigned to the at least one symbol of the first data.

21. (Currently Amended) The device according to claim 17, wherein the device is configured to:

assign the data bits ~~to the period~~, such that all of the data bits are transmitted during the first and second transmission times, one portion of the assigned bits being uniformly distributed over the first transmission time, and the other portion of the assigned bits being uniformly distributed over the second transmission time.

22. (Previously Presented) The device according to claim 21, wherein

the first transmission time corresponds to far-end crosstalk time generated in a data transmission path and the second transmission time corresponds to near-end crosstalk time generated in the data transmission path.

23. (Currently Amended) The device according to claim 21, wherein

the one or more data symbols includes at least one symbol of a first data and at least one symbol of a second data, and

the device is configured to assign the data bits such that the at least one symbol of the first data is transmitted during the first and second transmission times, and the at least one symbol of the second data is transmitted during a portion of the first and second transmission times not assigned to the at least one symbol of the first data.

24. (Currently Amended) A method of transmitting a set of data bits according to a periodic transmission timing, wherein the set of data bits are transmitted over a plurality of periods of the transmission timing, comprising:

setting a first and second transmission time for ~~a~~ each period of the transmission timing;

organizing the data bits into units of data symbols;
allocating a constant number of data bit spaces for transmission during each period of the transmission timing, the data bit spaces being allocated to achieve a higher transmission rate during the first transmission time than the second transmission time; and
~~assigning one or more data symbols to the period;~~
assigning the data bits of the one or more in the data symbols to the allocated for data transmission bit spaces, such that all of the data bits of the one or more data symbols in each data symbol are transmitted during the same period of the transmission timing, ~~and the bits are uniformly assigned over at least one of the first and second transmission times.~~

25. (Currently Amended) The method according to claim 24, further comprising:

assigning the data bits to the period, such that all of the data bits are transmitted during the first transmission time ~~of the period~~.

26. (Previously Presented) The method according to claim 25, wherein the first transmission time corresponds to far-end crosstalk time generated in a transmission data path.

27. (Currently Amended) The method according to claim 25, wherein

the one or more data symbols includes at least one symbol of a first data and at least one symbol of a second data, and

the data bits are assigned, such that the at least one symbol of the first data is transmitted during the first transmission time, and the at least one symbol of the second data is transmitted

during a portion of the first transmission time not assigned to the at least one symbol of the first data.

28. (Currently Amended) The method according to claim 24, wherein the device is configured to:

assign the data bits to the period, such that all of the data bits are transmitted during the first and second transmission times, one portion of the assigned bits being uniformly distributed over the first transmission time, and the other portion of the assigned bits being uniformly distributed over the second transmission time.

29. (Previously Presented) The method according to claim 28, wherein the first transmission time corresponds to far-end crosstalk time generated in a data transmission path and the second transmission time corresponds to near-end crosstalk time generated in the data transmission path.

30. (Currently Amended) The method according to claim 28, wherein the one or more data symbols includes at least one symbol of a first data and at least one symbol of a second data, and

the data bits are assigned, such that the at least one symbol of the first data is transmitted during the first and second transmission times, and the at least one symbol of the second data is transmitted during a portion of the first and second transmission times not assigned to the at least one symbol of the first data.

31. (New) A communication system that performs data communication between data communication units, comprising:

a setting unit configured to set a data transmission duration that is within a given period, and suitable for data transmission in view of a cyclical interference noise; and

an assigning unit configured to assign bits in such a manner that the data to be transmitted within the given period can be transmitted during the data transmission duration within the given period and the data is distributed substantially uniformly over the data transmission duration within the given period.